

CLAIMS

[1] A method for preventing elution of nickel from a wetted instrument made of copper alloy and plated with a material containing nickel, comprising applying a protective film formation agent to at least a wetted surface of the wetted instrument to form a protective film, thereby suppressing the elution of the nickel.

[2] A method for preventing elution of nickel from a wetted instrument made of copper alloy according to claim 1, wherein the protective film formation agent contains at least one species selected from the group consisting of benzotriazole, benzotriazole derivatives and organic acids including straight-chain fatty acids.

[3] A method for preventing elution of nickel from a wetted instrument made of copper alloy according to claim 2, wherein the protective film comprises two layers of or an appropriate composite layer of benzotriazole and organic acids including a carboxylic acid that constitute the protective film formation agent.

[4] A method for preventing elution of nickel from a wetted instrument made of copper alloy according to any one of claims 1 to 3, further comprising forming a second protective film on a surface of a nickel coat at a wetted section of the wetted instrument using the protective film formation agent, thereby suppressing the elution of the nickel due to bimetallic corrosion via the second protective film.

[5] A method for preventing elution of nickel from a wetted instrument made of copper alloy according to claim 4, wherein the nickel coat has pinholes and the second protective film is formed in the pinholes

using the protective film formation agent so that the copper alloy and nickel are insulated.

[6] A method for preventing elution of nickel from a wetted
5 instrument made of copper alloy according to any one of claims 1 to 3,
wherein the protective film formation agent is used to form the protective
film on a surface of a nickel coat on a wetted section of the wetted
instrument, thereby suppressing via the protective film dissolution of the
nickel per se by wetting.

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[7] A method for preventing elution of nickel from a wetted
instrument made of copper alloy according to any one of claims 1 to 6,
wherein the protective film formation agent is applied to at least the
wetted surface of the wetted instrument to form a protective film, and
15 further comprising removing by rinsing a nickel salt adhering as a
residual to an inside of the wetted instrument.

[8] A method for preventing elution of nickel from a wetted
instrument made of copper alloy according to claim 7, further comprising
20 deleading a surface layer of the wetted section of the wetted instrument.

[9] A method for preventing elution of nickel from a wetted
instrument made of copper alloy according to claim 7 or 8, wherein one or
both of the nickel salt adhering as a residual to the inside of the wetted
25 instrument and lead segregated on the surface layer of the wetted section
are rinsed with a cleaning fluid containing a nitric acid and having a
hydrochloric acid added thereto as an inhibitor.

[10] A protective film formation agent for forming a protective
30 film to prevent elution of nickel from the wetted instrument made of

copper alloy according to any one of claims 1 to 9, comprising at least one species selected from the group consisting of benzotriazole, benzotriazole derivatives and organic acids including a straight-chain fatty acid.

- 5 [11] A detergent for preventing elution of nickel from the wetted instrument made of copper alloy according to any one of claims 7 to 10, that enables the nickel salt adhering as a residual to the inside of the wetted instrument to be removed and metallic nickel on a spout section of the wetted instrument to be suppressed from being eluted.